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## Design Requirements for WebOPS

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# INTRODUCTION AND BACKGROUND<sup>1</sup>

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## 1. Basic Statement of WebOPS Objectives

To improve teamwork within Expanded Strategic Objective Teams (SOTs) by creating a web-based collaborative computer interface between USAID and its partners—as well as among USAID partners.

## 2. Challenges for the WebOPS Vision

WebOPS' primary task is facilitating dialogue between operating units and partners (plus among partners) by enabling real-time (when possible) transparent access by users both internal and external to USAID. The equipment, or hardware, may be the same as that needed for the New Management System (NMS) or its successor and for other USAID operations, but the supporting tools, or software, are different.

## 3. General Requirements

- # Must be user friendly
- # Must enable improved communication and information sharing
- # Must take advantage of available COTS and provide a suite of software
- # Must take maximum advantage of technology trends and move toward being an Internet-based environment (Appendix B)
- # Must be able to use on a PC with Internet access
- # Must ensure maximum integration between planning, achieving and judging components of USAID reengineering
- # Must have maximum flexibility to change as new software becomes available or new needs/demands from primary end-users are identified
- # Must have highest degree of compatibility with IBM-compatible systems
- # Must have hardware and software compatibility with the New Management System (NMS) or its successor
- # Must minimize costs to users
- # Must have high degree of potential for sustainability
- # Must be easily maintainable

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<sup>1</sup>Appendix A provides the Functional Specifications for WebOPS.

## # Design Requirements Description

### 4. Building the Home Page

Frames or common borders will be used on the Home Page. One frame or segment within common borders will be an organizer for reference; the second will be a workspace for use by partners on Expanded Strategic Objective and Results Package Teams, and others.

#### 4.1 The Organizer

The Organizer provides details on how the web site is organized. It contains the following navigation buttons:

- # Internal or local links to other pages on the web site, including:
- # Welcome/introduction/objective of WebOPS
- # Overview and description of what WebOPS does, what WebOPS houses and what is housed elsewhere but accessible via links from WebOPS.

Description of WebOPS major features:

- # Navigation
- # Communications Capabilities
- # Help Desk
- # Planning
- # Achieving
- # Judging
- # External links to tools (e.g., scheduler)
- # Tools (e.g., MERIT-like applications)
- # Resources (e.g., SD Datacenter, related documents, download presentation resources)
- # Procedures (e.g., protocols of ownership, download, upload)
- # Current Status
- # Summary or lists of status reports available for the various results packages (or associated activities, as often as the site manager determines it should be updated)
- # Description of what the current status of Internet, computer hardware, and software capacity is among partners (to keep each partner up-to-date on connectivity).

#### 4.2 The Work Space

The Work Space frame on the Home Page is the place where applets will be active and used by Expanded SO Teams, Results Package Teams, Activity Managers, and others. This frame provides individual or shared space for:

- # Viewing graphics, documents, etc.
- # Employing E-mail and E-conferences
- # Utilizing white board facilities for interactive work efforts
- # Using bulletin boards for information exchange
- # Interacting via chat groups or discussion forums in an asynchronous manner
- # Word processing
- # Applying other work-related tools and software.

WebOPS will open with a hotel floor plan, the metaphor used in designing the original vision of WebOPS. It will have an explanation of WebOPS, its objectives, what it does, and how it works. Clicking on the hotel lobby portion of the graphic will open a mini-site map rendered in the shape of the Expanded SO Team's Results Framework, with hot-button links to component Results Packages viewable in a variety of perspectives. This provides teams with a direct focus on the development efforts upon which they place their attention on a daily basis.

## **5. Navigation Tools of WebOPS**

### **5.1 Links**

WebOPS will have the following links:

- # Internal links—to other pages in a given web site
- # External links or “hot links”—to other web sites (i.e., with different domain names) with relevant information (See Appendix C for examples)
- # E-mail links—a pre-addressed E-mail form for direct messaging by a user to the webmaster, RPT leader, Expanded SO Team Leader, etc.

### **5.2 Anchors**

WebOPS' anchors will allow users to jump to another part of a long page.

## **6. Communications Capabilities**

### **6.1 E-mail**

E-mail provides a communication link between various users. There are intranet systems such as Banyan Mail currently used by USAID staff. There is also an array of E-mail software packages and services providers. A conventional commercial E-mail arrangement can be used in conjunction with WebOPS.



Additionally, where appropriate on WebOPS, there will be built-in E-mail capabilities so users can address specific questions to the site manager, SO Team Leader, or whoever “manages” a site. The E-mail address that is shown on a web site page can be clicked on to directly access an E-mail address. The E-mail frame will include the following attributes:

- # *Address* to send an outgoing message to the site manager, team leader, etc.
- # *From* box providing an opportunity for the sender to provide an address to which the recipient can directly reply
- # *Text* box/composition window allowing for text insertion

Tool bar with the following attributes:

- # *Attach* button which allows attachment of separate document
- # *Keep copy* button which allows storage of message sent
- # *Send* button which allows the message (and/or associated attachments) to enter a queue.

## **6.2 FTP (File Transfer Protocol)**

The FTP allows you to transfer files from one place to another. Among other transfers that WebOPS will permit (e.g., using “ftp client”) is the transfer of files from one computer to another (uploading or downloading).

## **6.3 Team building software**

WebOPS will provide access to team building software. There will be team space with real-time talk interfaces. There will also be personal file storage for members-only access, opportunities for virtual teaming, etc.

## **6.4 Groupware**

Groupware is web-based software that can be used by participants to set up meeting agendas, include user-entered remarks and permit voting. Groupware usually is textual, but with HTML tags can provide opportunities to link to graphics or other pages on the WWW. An important aspect of groupware for teams is that different users can have different access rights. This is particularly important for teams who want to have a degree of privacy for the free flow of ideas and opportunity to address areas of conflict that when resolved may provide for more enhanced products because of the creativity encouraged by relative privacy.

## **6.5 White Boards**

WebOPS will provide teams with access to virtual white boards. The purpose is to provide team members who may be working at different geographic locations with a consistent picture of their work as if they were drawing, writing, sketching, concept mapping, etc. on the same board. All team members receive local changes that are made on the white board in a consistent, or real-time manner. The purpose is to standardize interactive online communication between users.

## **6.6 Bulletin Boards**

WebOPS will provide Expanded SO and RP teams with Bulletin boards that allow interactive message exchange. They can also create an online community and provide for information exchange and “talk” forums on a variety of topics.

## **6.7 Chat Groups**

Chat groups provide for asynchronous interactivity via text shared among members of Expanded SO or RP teams. At present, audio COTS do not provide the possibility of more than two individuals “chatting” at a time. However, Text Talk allows participants to queue up and indicate their interest in being next in line to comment. [NOTE: If you want to keep records of the content of text chats--not just the fact that the chat session merely occurred—then the chat becomes an object which has a number of characteristics that must be designated, including “ownership.” This feature must be addressed in the design.]

## **6.8 Problem-solving Software**

WebOPS will be investigating opportunities to include appropriate problem-solving software. Most of it has been developed and used in the industrial and technology realms, and thus has little applicability for sustainable development activities. However, the main function of this kind of software (and the reason to attempt to access it for use by teams) is that it facilitates human reasoning and helps team members reach more logical conclusions. Some of the key features are:

- # Clarification of problems
- # Analysis of causes of the problem
- # Development and selection of appropriate solutions
- # Pro-active planning operations that facilitate teamwork.

## **6.9 Indexing and Searching**

WebOPS will provide a tool for indexing and searching relevant information in graphic and/or the narrative formats, identifying subjects wherever they appear for cross-reference purposes.

## **6.10 Word Processing**

COTS provide a variety of word processing software. Some of those that are being considered include Corel 8 with Word Perfect and Microsoft Office’s Word 7. These provide users with text production capabilities that can be shared via attachments, faxed, published, archived in a library, or otherwise made accessible (as appropriate) to other team members.

## **6.11 Publishing**

WebOPS primary purpose to improve communication among Expanded SO Team and RP Team members. It is not intended to be a tool to generate better information to report to USAID/W and subsequently to the Congress, however WebOPS will be able to do that as well. WebOPS will provide a way to “publish” the Results Framework in the following ways:

- # On-screen view

- # Printable
- # Send to
- # E-mail
- # Other.

### **6.12 Listserver**

Each RP Team will provide information via a newsletter/listserver communication tool. Participants in an RP Team will be given access via a password. Group discussions can maintain a degree of privacy dependent upon the norms established by the RP Team.

### **6.13 Scheduler**

An address or scheduler capability will provide information about dates, agendas, and pre and post-meeting activities. The scheduler can set face-to-face meetings as well as virtual meetings via computer.

## **7. Help Desk**

Each of the Planning, Achieving, and Judging tools will have help functions. The following describe more details of specific wizards that will facilitate end-user understanding and application of each major tool.

### **7.1 Wizards/Help Functions for RF Builder**

WebOPS will provide wizards to aid the user in the various tasks of building and developing the RF (see RF Builder section below) and RPs (see RP Builder section below). Key attributes of the RF wizard will be answers to such questions as:

- # Where to place boxes, select default shape or customize to individual Expanded SO Team needs, and how to number them
- # What information to include in each box (e.g., results statement, development partners, time frame)
- # How to frame results statements
- # How to articulate development hypotheses
- # How to make links that demonstrate lines of causality
- # How to think about necessary and sufficient conditions to achieve other levels of results
- # Where potential feedback loops of multilinear causality might be portrayed
- # How to link graphic and narrative material
- # How to link given results to data in Target Data Template.

[NOTE: These questions are important as a beginning, but the wizard will be refined through the alpha testing phase to focus on the full array that might be useful for a given mission, Expanded SO Team, or RP team. These and other questions will also be critical for teams updating or modifying RFs as new information becomes available or as planning processes evolve.]

## **7.2 Context Builder**

WebOPS will provide USAID staff and partners with access to internal and external links and search tools that provide relevant information on the context in which sustainable development efforts take place. Context builder will provide a set of questions to ask about the development context (e.g., macro economic issues, demographic factors, trends of natural resource use and degradation, existing policy framework, existing organizational resources in country, activities of other donors, historical data) for a given Strategic Objective. It will provide hot links to other documents that provide substantiating information of use to team members. It will also provide access to scenario development software which will allow team members to ask questions and respond to “what ifs,” such as “What would happen if we didn’t do anything?”

## **7.3 Wizard/Help Function for RP Packager**

The wizard for the Results Packager will provide answers to questions about:

- # How to create a Results Package based on:
  - R Management efficiencies
  - R Causal linkages between IRs
  - R Who should participate on a Results Package Team
  - R What the activities are
  - R What the delegations of authority for a team are in a given mission
  - R What information the RP team needs to track to make decisions and report on progress toward achievement of a given result or set of results.

# **8. Building and Accessing Planning Tools**

## **8.1 Results Framework Builder**

WebOPS will provide improved graphical and textual documentation of Results Frameworks that can be shared among team members and others who share access to the graphics and text capabilities from the Internet. This will reduce previous problems of a lack of a common graphics capability to send and receive RFs, except by mail or fax. RF Builder will provide for graphic and textual views of RF details to enable tracking of USAID- and partner-funded Intermediate Results, as well as membership, documents, and meetings related to IRs. The RF Builder will also provide communications capabilities for Expanded SO Team members to work on the RF since it is intended to be a living document in a learning organizational context.

RF Builder will provide a means to update existing RFs as teams work through the iterative process of development. This would include a default function that provides for a change in the date of any updated versions.

RF Builder will also provide a means for tracking changes made as it goes through its various iterations. Key attributes that need to be tracked and recorded include:

- # Who changed what
- # Explanation of why something was changed
- # When a change was made.

This kind of information will provide a historical record of the development and evolution of any given RF. This might be useful for sharing the history of the development of the vision with new team members, communications with non-team members about the reasons certain decisions were made, and responding to requests for information from other missions and USAID/W.

#### *8.1.1 Graphic View of an RF*

WebOPS will provide a default template for constructing a Results Framework. It will allow users to define and name their own template, if they so desire. Also, as changes are made in RF that may affect the configuration of a given Results Package, there will be a prompter, or task reminder, to indicate potential changes in the RP that need to be discussed.

The graphic view of a RF will be able to capture the following attributes:

- # Strategic Objective—with statement of result that the SO intends to achieve, list of development partners and time frame, list of relevant documents, and list of SOT members
- # IRs—with results statement, list of development partners and time frame, list of relevant documents, and list of RPT members
- # Linkages—distinguishing causality between results, as well as between Intermediate Results and the Strategic Objective
- # Results Packages—delineating sets of results that form a Results Package (described in greater detail in Results Package Builder below)
- # Links to Performance Measurement Plan Template and Target Data template—described in Judging section below
- # Documents—relevant to the development of the Results Framework to which readers might want to refer for more detailed information (e.g., analytic reports, country strategic plan, government documents, other donor analyses).

#### *8.1.2 Text/Narrative Attributes of RF Components*

WebOPS will include hypertext capability that is adequate to “capture” the substantive aspects that are portrayed in the graphic. The following are the primary components of the text/narrative of an RF:

- # Strategic Objective

- # Intermediate Results
- # Development hypotheses linking results
- # Key indicators to provide more detail on how progress toward achievement of results is being measured
- # Document sources relevant to RF development.

### 8.1.3 *Communications Capabilities*

RF Builder can access a variety of communications software capabilities for team members to interact in real-time or in asynchronous ways. See communications capability section above.

## 8.2 **Results Packager**

### 8.2.1 *Graphical Tool*

WebOPS will provide a graphical tool to partition the RF into Results Packages. Administratively linked aspects of the RF, such as a Results Package, can be distinguished.

WebOPS will provide a means to update existing RPs. As changes are made in the RF that may affect the configuration of the RP, there will be a prompter to indicate potential changes in the RP that need to be discussed.

### 8.2.2 *Properties Sheet*

The properties sheet will outline the attributes of a Results Package:

- # Members
- # IRs
- # Activities
- # Delegations of authority
- # Resources available
- # Hot links to Performance Measurement Template and Target Data Template for decision-making information.

### 8.2.3 *Tracking changes in Results Packages*

WebOPS will provide a means for tracking changes made to the above attributes by creating a historical record of:

- # Who made changes
- # Why changes were made
- # When changes were made.

### 8.2.4 *Communications Capability*

The requirements here are described in detail above. The RP team should have access to software and hardware that provides a discussion or—minimally—an E-mail communication across an RP Team.

## **9. Building and Accessing Achieving Tools**

### **9.1 Results Package Manager**

The Results Package manager will be comprised of a suite of productivity-enhancing tools. They will include many of the communications tools described above, as well as tools for budgeting, grant tracking, presentation making, scheduling, contacts/rolodexing, training, library referencing, and databases accessing.

#### *9.1.1 Communications Capabilities*

[See above under communications capability section.]

#### *9.1.2 Budgeting*

WebOPS will provide a budget and accounting spreadsheet type software, such as Microsoft Excel 7, that can be used for tracking personnel, fiduciary expenditures, materials inventories, and other relevant materials. Many COTS exist that can be customized by users. Key attributes will be:

- # Worksheets—divided into columns and rows into which numbers or text can be typed
- # Cells—where rows and columns intersect and where the information or data is typed
- # Numbers—representing quantities, lengths, amounts, etc.
- # Formulas—allowing calculations of the data inputted into the spreadsheet
- # Labels—textual reminders of what the data in cells represent.

#### *9.1.3 Grant Tracking*

WebOPS proposes to access a MERIT-like program for tracking grant funding. MERIT was developed by USAID/South Africa and provides the capability to track numerous grants in any portfolio.

Attributes of the grant tracking software include:

- # Grant name
- # Grantee name
- # Grant number
- # Purpose of grant
- # Activity manager
- # Total amount of grant
- # Amount of grant funds expended

- # Time frame for grant
- # Areas where grant is being administered
- # Contact Information of Grantee
  - Name
  - Mailing address
  - Phone
  - Fax
  - E-mail.

#### *9.1.4 Presentations*

WebOPS will provide a slide graphic presentations programs. Again, COTS, such as PowerPoint are available. They provide a visual means by which to structure a presentation, including text, charts, pictures, and other graphics.

#### *9.1.5 Contacts/Virtual Rolodex*

A variety of COTS provide opportunities to “capture” information systematically about individuals with whom an individual team member or the whole team has contact. Key attributes include:

- # Name
- # Mailing address
- # Site address
- # Phone number
- # Fax number
- # E-mail
- # Other details.

#### *9.1.6 Training*

WebOPS will provide access via hot links to existing online training materials. For example, it will provide a hot link to the Africa Bureau SD Datacenter that includes links to partners. For example, in the Datacenter’s list of partners is the Results-Oriented Natural Resource Management Project (RESON), which has training materials on the development of Results Packages. Other training manuals will be made available via hot links.

#### *9.1.7 Library*

WebOPS will provide a library archiving and searching function. Materials such as the ADS manuals, USAID definitions, and reengineering documents can be accessed and searched. There will be a source book of same-sector research/data that can be customized by individual Expanded SO or RP teams to ensure that all relevant information is readily accessible to all members. The library will also



have hot links to other sites (e.g., FAO, World Bank) that provide additional access to relevant materials.

### 9.1.8 Databases

WebOPS will provide access to COTS database software that can be used by the team to input data relevant to its own activities. It will also provide customizable hot links to other databases (e.g., those of partners which form the basis for their reporting systems), as well as other online databases that may be of benefit.

## 10. Building and Accessing Judging Tools

### 10.1 Performance Management Plan (PMP) Template

As with other templates and graphics, WebOPS will provide a default for construction, however, it will allow users to delineate or define their own template if they so desire. The PMP template fundamentally serves to organize information on indicators being used to measure progress toward achievement of results outlined in a Results Framework. This serves as the matrix for the development and presentation of a Performance Measurement Plan (PMP). It has the following attributes:

- # Name of indicator
- # Definition of indicator
- # Unit of measurement
- # Data source
- # Method of data collection
- # Reporting schedules
- # Comments for information that will help managers and readers understand details that might not otherwise easily fit into template columns.

### 10.2 Target/Data Template

The Data view is a template that shows expected and actual targets for each indicator outlined in the Performance Measurement Plan. It has the following attributes:

- # Name of indicator
- # Definition of indicator
- # Unit of measurement
- # Baseline year
- # Baseline data

- # Out-year columns with space for input of expected target and actual target (based on data collected)
- # Space for comments to explain details that might not otherwise be evident in the data view.

### **10.3 Hot Links to Relevant Documents**

Any number of documents will provide detailed information on the data and information that appear in the templates. These documents (e.g., quarterly reports, special studies, government documents, donor documents) can be accessed as needed (and as made available on the Internet by USAID and its partners and customers).

## Hardware/Software Standards

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We are building WebOPS to meet the following general standards for hardware and software:

- # Hardware: IBM PC-compatible
- # Operating system: Windows 95
- # Browser: Internet Explorer 4; Netscape 4
- # Productivity suites: Microsoft Office 97 (including Word, Excel, Outlook, and PowerPoint; Corel Suite 8)
- # Database manager: undecided; Filemaker Pro is one candidate
- # Charting: undecided; Visio 5 is one candidate
- # Groupware suite: undecided; Microsoft Outlook is one candidate
- # Interactive conferencing: undecided; Netmeeting/Netshow is one candidate.

## Appendix A

### Functional Specifications for WebOPS

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#### 1. Creating a Results Framework (RF).

- 1.1 The user will assign a graphic symbol for a Strategic Objective (SO), an Intermediate Result (IR) where USAID is the principal donor, an IR where a development partner may be the primary supporter and USAID among those supporting it, and causal linkages.
- 1.2 The graphic will have a short name and an optional explanatory hypertext of up to 1500 characters.
  - 1.2.1 An editable list of the short names will be maintained as categories of SOs, IRs and linkages, and will be presented to the user as a selection of choices.
  - 1.2.2 The list of short names will be maintained.
- 1.3 An IR graphic will have a list of development partners of up to 20, distinguishing the partners by budgetary responsibilities.
  - 1.3.1 An editable list of the partners will be maintained and presented to the user as a selection of choices.
  - 1.3.2 The list of partners will be maintained in an address book database.
- 1.4 An IR graphic will have a time frame (description of duration, giving start time and end time).
- 1.5 An IR graphic will have an optional list of relevant documents of up to 20.
  - 1.5.1 An editable list of the documents will be maintained and presented to the user as a selection of choices.
  - 1.5.2 The list of documents will be maintained in a documents database.
- 1.6 An IR graphic will have an optional list of Core and Expanded SOT members of up to 20.
  - 1.6.1 An editable list of the members will be maintained and presented to the user as a selection of choices.
  - 1.6.2 The list of members will be maintained in an address book database.
- 1.7 An IR graphic will have an optional list of indicators and/or performance measurement plans.
  - 1.7.1 An editable list of the indicators and/or performance measurement plans will be maintained and presented to the user as a selection of choices.
  - 1.7.2 The list of indicators and/or performance measurement plans will be maintained.

- 1.8 Users can use a default RF template or create their own. The template will characterize the items in an RF by distinguishing its elements.
- 1.9 The user can position the graphics on the work area.
- 1.10 The user can view the entire RF or its sections on one screen.
- 1.11 The user can print the entire RF or its sections on one page.
- 1.12 The RF will have one user assigned as the owner, with the date saved as a time stamp and the file distinguished as the original RF by assigning it the initial version number.
- 1.13 There will be an option to start the Results Packager to partition the IRs into Results Packages (RPs) graphically by selecting the group of IRs and assigning it to an RP.

## **2. Editing a Results Framework**

- 2.1 The user will be identified as the editor and the version number will be incremented when a user opens an existing RF for modification.
- 2.2 An optional text will be requested by reason of changes.
- 2.3 The Results Packager will automatically be invoked if the RF is being partitioned into RPs.
- 2.4 The most recent version number of the RF will be opened for editing unless the user specifies a specific version number.
- 2.5 When a user edits a specific version that is not the latest version of the RF and the edited version is saved, the program will assign it a new version number to distinguish it from an existing version.
- 2.6 The user can identify a version as the release version. This version will be used for the home page of that SO if they desire to post their RF.

## **3. Creating a Results Package**

- 3.1 The user can graphically partition the RF into groups of IRs. There will be two views of the RPs. One view reflects the RF and the RPs graphic, another is a folder view to reflect containment. Creating a results package in either view will differ.
- 3.2 An RP will have a short name and an optional descriptive hypertext of up to 1500 characters.
  - 3.2.1 The list of RP short names will be maintained.
- 3.3 An RP will have a list of development partners obtained from the lists of development partners of each IR in the package. This list can be edited to reflect a different list.

- 3.3.1 The list of the partners will be maintained and will be editable to delete partners, or to add any partners not listed for a particular IR but listed in an RP.
- 3.3.2 The list of partners will be maintained in an address book database.
- 3.4 An RP will have a time frame (description of duration, earliest start time and latest end time) obtained from the time frame of the IRs. The time frame can be edited to reflect a different time frame.
- 3.5 An RP will have an optional list of relevant documents from the list of documents for a given IR. This list can be edited to reflect a different list.
  - 3.5.1 The list of the documents will be maintained and will be editable to delete partners, or to add any partners not listed for a particular IR but listed in an RP's list of documents.
  - 3.5.2 The list of documents will be maintained in a documents database.
- 3.6 An RP will have an optional list of Core and Expanded SOT members made up from the list of members in the IRs.
  - 3.6.1 This list of the members will be maintained and will be editable to delete members, or to add any members not listed for a particular IR but listed in an RP's list of members.
  - 3.6.2 The list of members will be maintained in an address book database.
- 3.7 An RP will have an optional list of indicators and/or measurement plans made up by the indicators and/or measurement plans of the IRs.
  - 3.7.1 The list of the indicators and/or performance measurement plans will be maintained and will be editable to delete any indicators or measurement plans, or to add any indicator or measurement plan not listed for any particular IR but listed in an RP's list of indicators.
  - 3.7.2 The list of indicators and/or measurement plans will be maintained.

## **4. Editing the Results Packages**

- 4.1 The user will be identified as the editor and the version number will be incremented when a user opens an existing RP for modification.
- 4.2 An optional text will be requested by reason of changes.
- 4.3 The Results Packager will automatically open in the folder view, but the screen can be divided to provide both views.
- 4.4 The most recent version number of the RPs will be opened for editing unless the user specifies a specific version number.

- 4.5 When a user edits a specific version that is not the latest version of the RP and the edited version is saved, the program will assign it a new version number to distinguish it from an existing version.
- 4.6 The user can identify a version as the release version. This version will be used for the home page of that SO if they desire to post their RPs.

## **5. The Results Package Manager**

- 5.1 The RP Manager will maintain the lists of short names, partners, time frame, documents, members, and indicators/measurement plans for the RF elements and RPs.
- 5.2 The RP Manager will maintain the list of owners, editors, versions, reasons, and release versions of the RF and RPs.
- 5.3 The RP Manager will manage the submission process for the published RF and RPs by maintaining the lists of members who can change the home page.
- 5.4 The RP Manager will maintain the lists of members for the online private discussion groups.

## Appendix B

### Capacity Planning for WebOPS

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#### 1. Introduction

Three issues are central to capacity planning:

- # the levels of service you expect to provide a user
- # the applications and contents you require to meet the purpose of the site
- # the hardware and software systems that the applications are to run.

#### 2. Hardware and Software Systems

The following discussion focuses on the last issue. The information presented here are only general guidelines. Specific cases would need additional information and study.

Several capacity planning tools are available in the market. BGS, Optimal Networks, Make SYstems, NetSys Technologies, Eshbel Technologies, and Benchmark Factory are some of the vendors with market offerings. There are online resources and excellent articles (as well as books) that attempt to deal with this issue (see the brief list of sources at the end of this appendix).

A number of factors define the bandwidth requirements for WebOPS (for example, the number of simultaneous users). WebOPS' content is another—the more graphically oriented the content, the higher the bandwidth requirements. Another factor is the amount of traffic—a large amount will increase bandwidth requirements.

#### 3. Intel Architecture Using NT

The choice of operating system can influence the hardware (or vice versa). For instance, Unix and NT will run on several server architectures. The following estimates are based on an Intel architecture using NT:

<u>Service</u>	<u>0-5 Users</u>	<u>5-20 Users</u>	<u>20-100 Users</u>
WWW	486/33	486/100	Pentium/166
	32 MB RAM	32 MB RAM	64 MB RAM
	1 GB HD	1 GB HD	2 GB HD
FTP	486/33	486/100	Pentium/166
	32 MB RAM	32 MB RAM	64 MB RAM
	1 GB HD	1 GB HD	2 GB HD
E-mail	486/100	486/100	Pentium/166



	48 MB RAM	48 MB RAM	64 MB RAM
	1 GB HD	1 GB HD	2 GB HD
All three	486/100	486/100	Pentium/166
	64 MB RAM	64 MB RAM	64+ MB RAM
	2 GB HD	2 GB HD	2 GB HD

## 4. Traffic by Application Types

The following table contains some details about the traffic that can be generated by application types:

<u>Service</u>	<u>Application</u>	<u>Traffic</u>
Continuous info flow	Push channels	Application dependent
Multimedia	Video, Audio	28 kbps-1.3 Mbps per user session
WWW	Intranet/Internet	50-100 kb/hit
FTP	Intranet/Internet	Content dependent
E-mail	Intranet/Internet	10-50 kb/session

## 5. Types of Connection to Internet

The following table gives the types of connection to the Internet:

<u>Type</u>	<u>Cost</u>	<u>Speed</u>
Modem	\$	Up to 56.6 Kbps
ISDN	\$\$	Up to 128 Kbps
Frame Relay	\$\$\$	Up to 1.5 Mbps
T1	\$\$\$	Up to 1.5 Mbps

**Note:** The first two are modem types and the other two are permanent communication links.

The CNAC study team is aware of other Internet connectivity options (T2, T3, T4, SMDS, ATM, satellites), but we do not envision such large capacity throughput at this time.

## 6. Bandwidth Needs per User

The following table illustrates bandwidth needs per user:

<u>Service</u>	<u>0-5 Users</u>	<u>5-20 Users</u>	<u>20-100 Users</u>
WWW	56 Kbps	56 Kbps or ISDN	T1 leased line
FTP	56 Kbps	56 Kbps or ISDN	T1 leased line
E-mail	28.8 Kbps	56 Kbps or ISDN	56 Kbps/frame relay
All three	56 Kbps	56 Kbps or ISDN	T1 leased line

The security and fault tolerance aspects have deliberately been omitted from this discussion. Both aspects are additive and increase the need for hardware resources.

## 7. Sources

- # [www.capacityplanning.com](http://www.capacityplanning.com)
- # The Institute for Computer Capacity Management (ICCM)
- # CAPE (Capacity & Performance Engineering)
- # Capacity Planning and Performance Modeling; Menasce, Almeida & Dowdy (Prentice Hall, 1994)
- # Capacity Planning for Computer Systems; Browning (AP Professional, 1994)
- # Fulfilling Customer Needs: A Practical Guide to Capacity Management; Jackson & Frigon (John Wiley & Sons, 1998).

## Appendix C

### Selected WebOPS Links to Other Web Sites

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#### 1. African Information Technology and Internet Resources

- # The Abyssinia Cyberspace Gateway: Your Community Resource on the Web; <http://www.cs.indiana.edu/hyplan/dmulholl/acg.html>
- # Acacia Initiative (internet connectivity); [http://www.idrc.ca/acacia/acacia\\_e.htm](http://www.idrc.ca/acacia/acacia_e.htm)
- # Africa Internet Forum; <http://www.undp.org/sdnf/aif/policy.html>
- # Africa Link; <http://hawkeye.info.usaid.gov/africalink/>
- # African Connectivity Cost Comparison; <http://demiurge.wn.apc.org:80/africa/afcosts.htm>
- # African Data Dissemination Services; <http://edcintl.cr.usgs.gov/adds/adds.html>
- # African E-mail Accessibility; <http://www.ee.ic.ac.uk/misc/bymap/africa.html>
- # African Information Society Initiative; <http://www.bellanet.org/partners/aisi>
- # African Internet Connectivity; <http://demiurge.wn.apc.org:80/africa/>
- # African Internet Development Action Team (promotes Internet development); <http://www.africa.com/pages/aidat> [NOTE: no longer actively maintained]
- # International Telecommunication Union; <http://www.itu.ch/>
- # Internet Resource Guides: Selected Sites with Special Reference to Africa; <http://www.info.usaid.gov/regions/afr/abic/guides.htm>
- # Leland Initiative; <http://www.info.usaid.gov/regions/afr/leland>
- # Mbendi Information for Africa Computer and Communications Companies of Africa; <http://www.mbendi.co.za/>
- # National Telecommunications and Information Administration; <http://www.ntia.doc.gov/>
- # National Telephone Cooperative Association; <http://www.ntca.org/>
- # OECD Information and Communications Policy; <http://www.oecd.org/dsti/sti/it/index.htm>
- # The Online Intelligence Project—Africa; <http://kahn.interaccess.com/intelweb/africa.html>
- # Regional Telecommunications Restructuring Program; <http://www.info.usaid.gov/regions/afr/rtr/>
- # PC World East Africa; <http://www.africaonline.co.ke/AfricaOnline/pcworld.html>
- # SatelLife (international nonprofit using Internet technology to serve health communication and information needs); <http://www.healthnet.org>
- # Telecom Links for the Southern Africa Regional Telecommunications (RTR) Telecom Program; <http://rtr.worldweb.net/links.htm>

- # Telecommunications Industry Association; <http://www.industry.net/associations/tradeorg/tia.htm>
- # User's Guide to Electronic Networks in Africa (index by country); <http://www.aaas.org/international/africa-guide/index.html>

## **2. Information Technology and Communications, General**

- # Free IT Performance Measurement Guide; <http://www.npr.gov/library/announc/freeit.html>
- # Global Knowledge 97 Conference sponsored by the World Bank; <http://www.globalknowledge.org/>
- # African Universities Online (with Internet access and homepage on WWW); <http://www.aaas.org/international/ssa/afonline.htm>
- # Amex International (telecommunications company in Africa); <http://www.amexdc.com>
- # Decisions Support Systems Research Resources; <http://dss.cba.uni.edu/DSShome.html>
- # Federal Communications Commission; <http://www.fcc.gov/>
- # Global Information Infrastructure (GII) Initiative; <http://www.ntia.doc.gov/oiahome/gii.html>
- # Global Telecommunications Society; <http://embassy.org/gts/>
- # Greater Horn Information Exchange; <http://www.info.usaid.gov/HORN/>
- # Institute of Electrical and Electronics Engineers, Inc. (telecommunications work in Africa); <http://www.ieee.org/>

## **3. USAID General Sites**

- # Automated Directives System (ADS); [http://www.info.usaid.gov/ftp\\_data/pub/handbooks/](http://www.info.usaid.gov/ftp_data/pub/handbooks/)
- # Congressional Presentation (FY 98); <http://www.info.usaid.gov/pubs/cp98/afr/>
- # Development Experience System: USAID's Institutional Memory; <http://www.dec.org/search/dexs/docs-1987-present/> [NOTE: queries can be made in the databases accessed at site]
- # New Partnerships Initiatives (NPI) Resource Guide; <http://www.info.usaid.gov/pubs/npi/npiresrc.htm>
- # Results-Oriented Assistance: A USAID Sourcebook; <http://207.175.11.14/usgov/>
- # USAID Home Page; <http://www.info.usaid.gov/>
- # USAID's Development Clearinghouse; <http://www.dec.org/>

# USAID Publications; <http://www.info.usaid.gov/pubs/>

#### **4. Africa Bureau Sites**

# Africa Bureau Information Center (ABIC); <http://www.info.usaid.gov/regions/afr/abic>

# Africa Data Dissemination Services (ADDS); [http:// edcsnw4.cr.usgs.gov/adds/adds.html](http://edcsnw4.cr.usgs.gov/adds/adds.html)

# Productive Sector Growth and the Environment Publications; <http://www.info.usaid.gov/sdpsge/pubs/pubs.html>

# SD Datacenter; <http://209.135.238.67/>

#### **5. USAID Africa Region Environment and Natural Resource Management Sites**

# Agriculture and Forestry Sites; <http://www.info.usaid.gov/regions/afr/abic/agsites.htm>

# Central African Regional Program for the Environment (CARPE); <http://carpe.gecp.virginia.edu>

# Environment on the World Wide Web; <http://www.info.usaid.gov/regions/afr/abic/envsites.htm>

# NRM Analytic Framework; <http://www.info.usaid.gov/regions/afr/sdpsge/nrm/analfram/analfrm.html>

# Productive Sector Growth and Environment (USAID/Africa Bureau); <http://www.info.usaid.gov/regions/afr/sdpsge>

# Results Oriented Natural Resources Management Activity (RESON); <http://209.135.238.67/RESON/reson.htm>

# SD Datacenter; <http://209.135.238.67/>

#### **6. Environment and Natural Resources Management Sites, General**

# Australia's Environmental Information Sources on the Internet; [http://www.environment.gov.au/other\\_servers/other\\_servers.html](http://www.environment.gov.au/other_servers/other_servers.html)

# Biodiversity and Conservation Hypertext Book by Peter J. Bryant; <http://darwin.bio.uci.edu/~sustain/bio65/Titlpage.htm>

# Central African Regional Program for the Environment (CARPE) Bibliography (HTML); <http://carpe.gecp.virginia.edu/product/biblio.htm>

- # Central African Regional Program for the Environment (CARPE) Central African GIS Dataset; <http://carpe.gecp.virginia.edu/partners/gsfsc-umd/UMD/p4.gis.html>
- # Employment Opportunities, forestry; <http://ourworld.compuserve.com/homepages/eworks/FOREST.HTM>
- # ENRIC Searchable Tropical Forest and Conservation Bibliography; <gopher://minerva.forestry.umn.edu:70/11/trps>
- # The EnviroWeb: A Project of the EnviroLink Network; <http://www.envirolink.org/index1.html>
- # European Tropical Forest Research Network; <http://www.etfrn.org/>
- # FAO State of the World's Forests (SOFO); <http://www.fao.org/waicent/faoinfo/forestry/SOFOTOC.htm>
- # Famine Early Warning System (FEWS); <http://www.info.usaid.gov/regions/afr/fews>
- # Forest Frontiers Initiative; <http://www.wri.org/wri/ffi/>
- # International Center for Research in Agroforestry (ICRAF); <http://www.cgiar.org/icraf/>
- # Land Quality Indicators Program; <http://www-esd.worldbank.org/lqi/home.htm>
- # One World Magazine; <http://www.envirolink.org/oneworld/index.html>
- # Rainforest Action Network; <http://www.ran.org/ran/>
- # Regional Environmental Information Management Project (REIMP); <http://www-esd.worldbank.org/reimp/>
- # Remote Sensing Imagery for Natural Resources Monitoring: A Guide for First-Time Users; <http://bandersnatch.fnr.umass.edu/pub/rs.html>
- # Sustainable Business Network; <http://www.envirolink.org/sbn/>
- # Trees Project (Tropical Ecosystem Environmental Observation by Satellite); <http://www.mtv.sai.jrc.it/projects/treeswww/trees2.html>
- # Trees for the Future; <http://www.treesftf.org/>
- # World Conservation Monitoring Center (with databases); <http://www.wcmc.org.uk/>
- # WWW Virtual Library: Forestry; <http://www.metla.fi/info/vlib/Forestry/>

## **7. Environment and Natural Resources Management Organizations**

- # Center for International Forestry Research; <http://www.cgiar.org/cifor/>
- # CIRAD (research institute in France); <http://www.agropolis.fr/rcirad.html>
- # Cultural Survival; <http://www.cs.org/general.htm>

- # Earth Resources Observation Systems (EROS) Data Center DAAC (EDC DAAC); <http://edcwww.cr.usgs.gov>
- # Environmental Organizations Webdirectory: Forestry; <http://www.webdirectory.com/Science/Agriculture/Forestry/>
- # International Institute for Sustainable Development; <http://iisd1.iisd.ca/>
- # Internet Directory for Botany; <http://www.helsinki.fi/kmus/botmenu.html>
- # IUCN World Conservation Union; <http://www.iucn.org>
- # International Union of Forestry Research Organizations (IUFRO); <http://iufro.boku.ac.at/>
- # Natural Resources Research Information Pages—Institutions and Organizations; <http://sfbox.vt.edu:10021/Y/yfleung/forestry.html>
- # Nature Conservancy; <http://www.natureconservancy.org/>
- # Sierra Club; <http://www.sierraclub.org/>
- # TROPENBOS Foundation; <http://www.tropenbos.nl/>
- # World Environment Center; <http://www.wec.org/>
- # World Resources Institute; <http://www.wri.org/>
- # Worldwatch Institute; <http://www.worldwatch.org/>
- # World Wildlife Fund; <http://www.wwf.org>

## **8. Agricultural Organizations and Agriculture Sites with Information Related to Africa**

- # Agribusiness, Food Industry and Forest Industry Associations on the Internet; <http://www.nal.usda.gov/atmic/pubs/agriassn.htm>
- # Agricultural Market Information Virtual Library; <http://www.aec.msu.edu/agecon/fs2/market/contents.htm>
- # Agricultural Research and Extension Network (AgREN); <http://www.oneworld.org/odi/agren/index.html>
- # Agricultural Statistic Information Links (ASIL); <http://www.fao.org/waicent/faoinfo/economic/statisti/links/new.htm>
- # Agriculture Network Information Center (AgNIC); <http://www.agnic.org/>
- # Agriculture Online; <http://www.agriculture.com/>
- # AgCAL (AgNIC Calendar of Meetings, etc.); <http://www.agnic.org/mtg/>
- # AgExp (AgNIC Experts List); <http://www.agnic.org/experts/>

- # AgriGator; [http://gnv.ifas.ufl.edu/www/agator\\_home.htm](http://gnv.ifas.ufl.edu/www/agator_home.htm)
- # AgNIC Database Directory (of agriculture-related databases, datasets, and information systems); <http://www.agnic.org/agdb/>
- # Agricola CC (Agricola Subject Category Codes); <http://www.agnic.org/cc/>
- # Agrilink—South Africa's Virtual Trading and Information Centre; <http://www.agrilink.co.za/>
- # Agrisurf (searchable index); [http://www.agrisurf.com/agrisurfscripsts/agrisurf.asp?index=\\_25](http://www.agrisurf.com/agrisurfscripsts/agrisurf.asp?index=_25)
- # Alternative Farming Systems Information Center (AFSIC); <http://www.nal.usda.gov/afsic/>
- # CAB International (biological pest management, etc.); <http://www.cabi.org/>
- # Consultative Group on International Agricultural Research (CGIAR); <http://www.cgiar.org/>
- # Directories of Agriculture-Related Internet Information Resources; <http://www.agnic.org/diragis/>
- # Entomology Index of Internet Resources via Iowa State; <http://www.ent.iastate.edu/List/>
- # FAO's Food Supply Situation and Crop Prospects in Sub-Saharan Africa; <http://www.fao.org/WAICENT/FAOINFO/ECONOMIC/giews/english/eaf/eaftoc.htm>
- # FruitNet—South Africa Market Prices for Fruit; <http://www.fruitnet.co.za>
- # GENRES—Information System on Genetic Resources; <http://www.dainet.de/genres/genrese.htm>
- # Global Information and Early Warning System on Food and Agriculture (GIEWS); <http://www.fao.org/WAICENT/FAOINFO/ECONOMIC/giews/english/giews.htm>
- # International Food Policy Research Institute (IFPRI); <http://www.cgiar.org/ifpri/>
- # International Institute of Tropical Agriculture (includes list of NARS—National Agricultural Research Systems in Subsaharan Africa); <http://www.cgiar.org/iita/>
- # Links to Internet Resources Agribusiness and Business Research; <http://kierkegaard.ifas.ufl.edu/tim/courses/aeb4325/busres.htm>
- # Smallholder Agriculture in Africa; <http://www-smallholder.entom.slu.se/>
- # Special Program for African Agricultural Research (SPAAR); <http://www.worldbank.org/html/aftsr/>
- # Statistical Resources on the Web: Agriculture; <http://www.lib.umich.edu/libhome/Documents.center/stag.html>
- # Sustainable Agriculture, Virtual Library; <http://www.floridaplants.com/sustainable.htm>
- # World Wide Web Agricultural Perspectives; <http://www/wdc/net/~smd/agcult.htm>



## 9. Other Development Organizations

- # African Development Foundation; <http://www.citation.com/hpage2/adfon2.html>
- # Canadian International Development Agency (CIDA) Virtual Library on International Development; <http://w3.acdi-cida.gc.ca/Virtual.nsf/pages/index.htm>
- # European Union; <http://europa.eu.int/>
- # Food and Agriculture Organization (FAO) of the United Nations; <http://www.fao.org>
- # International Development Research Centre (IDRC); <http://www.idrc.ca/>
- # International Monetary Fund (IMF); <http://www.imf.org>
- # IMF Directory of Economic Commodity and Development Organizations; <http://www.imf.org/external/np/sec/decdo/contents.htm>
- # OECD/Development Assistance Committee Home Page; <http://www.oecd.org/dac/index.htm>
- # Overseas Development Administration (ODA); <http://www.oneworld.org/oda>
- # Overseas Development Institute (ODI); <http://www.oneworld.org/odi/>
- # Relief Web Home Page; <http://wwwnotes.reliefweb.int/>
- # SIDA (Swedish International Development Cooperative Agency); <http://www.sida.se/>
- # SIDA Info Centre; <http://www.sida.se/eng/infotek/infoteket3.html>
- # SIDA Evaluations; <http://www.sida.se/eng/infotek/eval/evaluation.html>
- # Sustainable Development Providers, Directory; <http://www.ecouncil.ac.cr/about/SDIP/sustdef.htm>
- # United Nations Home Page; <http://www.un.org/>
- # United Nations Development Programme; <http://www.undp.org/>
- # United Nations Environment Programme; <http://www.unep.org/>
- # The World Bank Group Topics in Development; <http://www.worldbank.org/html/extdr/thematic.htm>
- # World Bank Rural Development Department; <http://www-esd.worldbank.org/html/esd/agr/agrmain.htm>

## 10. Africa Information, General

- # American Association for the Advancement of Science, Sub-Saharan Africa Program; <http://www.aaas.org/international/ssa/ssa.htm>

- # Balance Sheet of Human Progress in Africa (e.g., life expectancy, child mortality, health, education, income); <http://www.unicef.org/miscellaneous/balance.htm>
- # Directory of Internet Resources on Africa and African History; <http://www.academicinfo.net/histafrica.html>
- # Health and Human Resources Analysis for Africa; <http://www.info.usaid.gov/regions/afr/hhraa/>
- # Home Pages, Complete Listing of Every African Country's Home Page; [http://www.sas.upenn.edu/African\\_Studies/Home\\_Page/Country.html](http://www.sas.upenn.edu/African_Studies/Home_Page/Country.html)
- # Miscellaneous African Dishes/Recipes/Restaurants; [http://www.sas.upenn.edu/African\\_Studies/Miscellany/menu\\_Miscellany.html](http://www.sas.upenn.edu/African_Studies/Miscellany/menu_Miscellany.html)
- # PRIDE Africa (business program); <http://members.tripod.com/~PrideAfrica>
- # Resources on Complete History of Africa dated back to 500 B.C.; <http://www.cup.org/Titles/AFRICA.html>
- # United Nations Databases; <http://www.un.org/databases/>
- # US Merchandise Trade with Sub-Saharan Africa (AFR); [http://www.info.usaid.gov/economic\\_growth/trdweb/subsah.htm](http://www.info.usaid.gov/economic_growth/trdweb/subsah.htm)

## **11. African Organizations, Selected**

- # The Foundation for Research Development (South Africa); <http://apies.frd.ac.za/frd/frdintro.html>
- # African Centre of Technology Studies—An Institute for Policy Research and Training for Sustainable Development in Africa; <http://www.anaserve.com/~acts/>
- # International Political Economy Network; <http://csf.colorado.edu/ipe/africa.html>
- # Organization of African Unity; [http://www-nunuc.uchicago.edu/munuc/REG\\_Committees/OAU.html](http://www-nunuc.uchicago.edu/munuc/REG_Committees/OAU.html)
- # Southern Africa Political and Economic Series Trust (SAPES); <http://csf.colorado.edu/ipe/sapem/sapem.html>

## **12. News Online from and about Africa**

- # Addis Tribune Online; <http://AddisTribune.EthiopiaOnline.Net/>
- # Africa News; [http://www.peacelink.it/an\\_curr.html](http://www.peacelink.it/an_curr.html)
- # Africa Online List of Newspapers Online and Links; <http://www2.ncsu.edu/ncsu/arm/NEWSPA.HTML>

- # Africa Online; <http://www.africaonline.com/AfricaOnline/covernews.html>
- # Africa News Online; <http://www.africanews.org>
- # Africa Recovery (Online); <http://www.un.org/ecosocdev/geninfo/afrec/>
- # African Communist (Online); <http://www.sacp.org.za/ac/>
- # African Libraries newsletter (ALN); <http://www.lib.msu.edu/lauer/aln/>
- # Afrique Tribune (Online); <http://www.pagel.com/afriquetribune/>
- # BBC News—Africa; <http://news.bbc.co.uk/hi/english/world/africa/default.htm>
- # Constitution News (ANC); <http://www.anc.org.za:80/lists/anc.pubs.html>
- # Daily Nation (Nairobi); <http://www.africaonline.co.ke/nation/>
- # Die Burger (Online) Capetown; <http://www.naspers.co.za/dieburger/english/>
- # East African; <http://www.africaonline.co.ke/estafrican/980409/index.htm>
- # EcoNews Africa; <http://www.web.net/~econews/index.html>
- # Electronic Mail and Guardian (South Africa); <http://www.mg.co.za/mg/>
- # L'Express (Online) Mauritius; <http://www.lexpress-net.com/>
- # The Express (Tanzania); <http://www.intafrica.com:80/express/>
- # FLASH Newsletter of the Network for Environment and Sustainable Development in Africa; <http://rri.org:80/nesda/flash.html>
- # Fraternite Matin Online (Ivory Coast); <http://www.africaonline.co.ci/AfricaOnline/infos/fratmat/fratmat.html>
- # Ghana Review International; <http://www.ghanareview.co.uk/>
- # Ghanaian, The Chronicle Online; <http://www.ghana.africaonline.com/AfricaOnline/newsstand/chronicle/1/homepage.html>
- # Horn of Africa Bulletin; [http://www.sas.upenn.edu/African\\_Studies/Newsletters/menu\\_HAF\\_Main.html](http://www.sas.upenn.edu/African_Studies/Newsletters/menu_HAF_Main.html)
- # International Peacekeeping News; <http://csf.colorado.edu/dfax/ipn/index.htm>
- # Internet WorldWide Namibia; <http://www.iwwn.com.na/>
- # Ivoir'Soir (Ivory Coast); <http://www.africaonline.co.ci/AfricaOnline/infos/ivs/ivs.html>
- # Le Jour Online (Ivory Coast); <http://www.africaonline.co.ci/AfricaOnline/infos/lejour/lejour.html>
- # Washington Post—Africa; <http://www.washingtonpost.com/wp-srv/inatl/africa.htm>
- # US/Africa Online Newspaper and Money Watch; <http://www.usafricaonline.com/>

# Zambia Daily Mail Online; <http://www.zamnet.zm/zamnet/zadama/zadama.html>

### **13. Africa business and finance news**

# Africa Online Business News; <http://www.africaonline.com/AfricaOnline/coverbusiness.html>

# Africa Stock Exchange Guide; <http://africa.com/pages/jse/page1.htm>

# Economic and Development Bulletin; <http://www.africanews.org/PANA/economics/>

# Economic Review (Nairobi); <http://www.africaonline.co.ke/AfricaOnline/ereview.html>

# Financial Mail Interactive; <http://www.fm.co.za/>

# South Africa's Bureau of Financial Analysis Network; <http://www.bfanet.com/>

# WoYaa! Internet Magazine Africa; <http://www.woyaa.com/TreeFR/Business/Economy/>

### **14. African Music**

# Africa Online Music; <http://www.africaonline.com/AfricaOnline/covermusic.html>

# Music Chat/Music Forum; <http://www.africaonline.com/AfricaOnline/cgi/chat.cgi?Music>

### **15. African Sports News**

# Africa Online Sports; <http://www.africaonline.com/AfricaOnline/coversports.html>

# Cricket Fund 2000; <http://www.lanka.net/cricket/crik2000.html>

# The Daily Soccer; <http://reuters.dailysoccer.com/cgi-bin/nph-search.cgi?what=text>

# PanAfrican News Agency Sports News; <http://www.africanews.org/PANA/sports/>

# 110 Minutes with Hakeem Olajuwon (basketball player); <http://www.usafricaonline.com/olajuwon.html>

# Zambia Daily Mail Sports; <http://www.zamnet.zm/zamnet/zadama/zadama.html>

### **16. African Studies Journals and Programs**

# African Collection; <http://www.uflib.ufl.edu:80/hss/africana/>

# African Studies on the Internet—Columbia University; <http://www.columbia.edu/cu/libraries/indiv/area/Africa/>

- # African Studies Quarterly: The Online Journal of African Studies; <http://web.africa.ufl.edu/asq/>
- # African Technology Forum (science and technology); [http:// web.mit.edu/africantech/www/](http://web.mit.edu/africantech/www/)
- # Clio en Afrique: L'Histoire Africaine en Langue Francaise; <http://www.up.univ-mrs.fr/~wclio-af/>
- # Electronic Newsletter of African Studies; [http://www.sas.upenn.edu/African\\_Studies/ASA/enas.html](http://www.sas.upenn.edu/African_Studies/ASA/enas.html)

## **17. African Travel**

- # Africa Online Travel; <http://www.africaonline.com/AfricaOnline/covertravel.html>
- # Index of Tour Operators; <http://www.africanet.com/africanet/tourops/safcons1/>

## **18. African Women/Gender Issues**

- # Africa Online Women; <http://www.africaonline.com/AfricaOnline/coverwomen.html>
- # African Center for Women; <http://www.un.org/Depts/eca/divis/acw/index.htm>
- # African Women Global Network; <http://www.osu.edu/org/awognet/>
- # IFPRI Gender Research Network; <http://www.cgiar.org/ifpri/gender/gender.htm>
- # Women in Development Network (WIDNET); <http://www.focusintl.com/widnet.htm>
- # Women of Africa Resources; <http://www.lawrence.edu/~bradley/war.html>
- # World Women in Development and Environment (WorldWIDE Network, Inc.); <http://www.zzzoom.com>

## **19. News, Sports, Business, Etc., US and International**

- # BBC News—Business; <http://news.bbc.co.uk/hi/english/business/default.htm>
- # CNN Financial News; <http://cnfn.com/>
- # CNN & Sports Illustrated; <http://www.cnnsi.com/>
- # Blackwell's Information Services; <http://www.blackwells.com/>
- # Dun & Bradstreet Internet Access; <http://www.dnb.com>
- # ESPNET Sportzone; <http://espnet.sportzone.com>
- # Federation Internationale de Football Association (Zurich); <http://www.fifa.com/index.html>

- # Financial Times; <http://www.ft.com/>
- # FinWeb Financial Links; <http://www.finweb.com/>
- # Global Financial Data; <http://www.globalfindata.com/>
- # Globe Online; <http://www.globeonline.fr/default.asp>
- # International Newspapers; <http://www.professional.net/inter-newspapers.htm>
- # Le Monde; <http://www.lemonde.fr>
- # Le Monde Diplomatique; <http://www.monde-diplomatique.fr/md/index.html>
- # The London Times and the Sunday Times; <http://www.the-times.co.uk/>
- # Miscellaneous Resources on Electronic Newspapers; <http://www.mediainfo.com/ephome/research/researchhtm/misc.htm>
- # The New York Times on the Web; <http://www.nytimes.com>
- # Washington Post—Sports; <http://search.washingtonpost.com/wp-srv/sports/front.htm>
- # Wired News (IT news); <http://www.wired.com/news/>

## **20. Reengineering in Other Federal Government Agencies**

- # Reinventing Government Home Page; <http://www.npr.gov/>
- # Office of Reinvention, Environmental Protection Agency; <http://www.epa.gov/reinvent/>
- # Business Practices Office of USDA Animal and Plant Health Inspection Service; <http://www.aphis.usda.gov/mb/bpt>

## **21. Of General Interest to Somebody, Somewhere**

- # Amazon.com; <http://www.amazon.com/>
- # Central Intelligence Agency; <http://www.odci.gov/cia/>
- # Dilbert Zone; <http://www.dilbert.com/>
- # The Funny Farm; <http://www.ifas.ufl.edu:7100/www/agator/htm/fun.htm>
- # Bill's Lepidoptera Photos (most recent ones from Kenya's Masai Mara National Park); <http://www.med.virginia.edu/~wth2m/menu.html>
- # Trendy Magic Interactive; <http://pw2.netcom.com/~sleight/interactivemagic.html>
- # Postcards from Texas Trading Post; [http://www.TravelTex.com/FS\\_TradingPost.html](http://www.TravelTex.com/FS_TradingPost.html)
- # Virtual Flower Bouquet; <http://www.virtualflorist.com/index.htm>

# White House Guest List; [http://www.motherjones.com/news\\_wire/WHguests\\_intro.html](http://www.motherjones.com/news_wire/WHguests_intro.html).